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AUGUST 17, 1889.

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. XXVI. REGULAR EDITION NO. 712.

ARCHITECTVRE

ENGINEERING

DECORATION

CONSTRVCTION

TICKNOR & COMPANY

BOSTON MASS.

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House, Allen's Lane, Chestnut Hill, Pa.
Tomb for an Illustrious Architect.
Chateau at Yvetot, Normandy.

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THE AMERICAN ARCHITECT AND BUILDING NEWS.

VOL. XXVI. Copyright, 1889, by TICKNOR & COMPANY, Boston, Mass. No. 712.

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Entered at the Post-Office at Boston as second-class matter.

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A DECISION of very considerable importance to persons interested in building has just been delivered by Judge Colt, of the United States Circuit Court, in Boston. It appears that a part of the construction of the new court-house, now in process of erection in that city, consisted in a frame, composed of wrought-iron beams, angles and so on, put together in the manner usual in such cases, and destined to support a floor. The contractor for the ironwork found it cheaper to buy his iron in Belgium than at home, and the frame in question was fitted, drilled and shaped there from the drawings, and the pieces then shipped to Boston to be put together in place. The custom-house officials levied a duty on the whole of one and one-quarter cents per pound, under the tariff of 1883, which places that impost upon "iron or steel beams, girders, joists, angles, channels, car-truck channels, T-columns and posts, or parts or sections of columns and posts, deck and bulb beams and building forms, together with all other structural shapes of iron or steel." The importer of the ironwork, of course, paid the sum demanded, to prevent the confiscation of his property, and then availed himself of his privilege of bringing suit to compel the collector to refund about two-thirds of the duty paid, on the ground that the frame was subject, not to the provision of the tariff relating to beams, but to the provision of the same tariff which says that "Manufactures, articles or wares not specially enumerated or provided for in this act, composed wholly or in part of iron . . . and whether partly or wholly manufactured," shall pay "forty-five per cent *ad valorem*." The judge decided from the evidence that what was imported in this instance was not the separate beams, girders and angles, nor a "structural form" in the commercial sense, but a new article of manufacture, subject only to the *ad valorem* duty of forty-five per cent, and that the fact of the frame being composed of beams and other articles specifically enumerated as subject to the duty of one and one-quarter cents per pound did not change the classification under which the structure as a whole should be placed, even supposing it to be possible, which was not proved, to sell the portions of the structure separately as merchantable beams.

THIS decision will probably surprise a good many people, particularly among architects and builders, who, perhaps from the fact that iron in buildings is usually paid for by the pound, whatever the shape in which it may be employed, have formed a habit of associating all forms of structural wrought-iron together in their minds, and return with some difficulty to the legislative view, which makes a sort of distinction between the beams, channels, angles and other ordinary materials of construction or manufacture, and the structures into which these materials are combined or "composed"; but it is unlikely that Judge Colt's decision will be reversed, or even seriously questioned, and, unless it is reversed, the result appears to be that persons, at least in the seaboard cities, who wish to use iron or steel domes, roof or bridge trusses, or similar combinations of the ordinary structural shapes, made in accordance with designs, and fitted and drilled or punched before delivery, can get them much cheaper from Belgium or France or England than at home.

THE Brooklyn *Times*, in an editorial about the competition for the new Criminal Court building in New York, presents some judicious, if not very forcible, thoughts on the folly of asking the competing architects to state the price of their services, and selecting the man who valued them at the lowest rate. The *Times* thinks that the usual five-per-cent commission is small enough for the care, skill and work required, and hopes that the practice of setting architects to underbid each other will not become general, for the sake of the public as well as the profession. This is, of course, very well, but the case is not strongly enough stated. We do not for a moment intend to cast any reflection upon the gentlemen whose proposition has been accepted, and who, we are sure, deplore now, and will deplore still more later, the necessity which seemed to compel them to offer to do the work at an inadequate price, or lose it, and the reputation which they hoped to gain by it, altogether; and we know that they will confirm our assertion, that if architects are to be generally expected to bid against each other for work, the commissions will all go to the most ignorant and dishonest men in the profession, and, more singular still, these ignorant and dishonest persons will make more money in carrying out their clumsy, ignorant and extravagant plans than the best architects would in executing the most beautiful, convenient and skilfully-studied designs at the usual remuneration of five per cent. By what arts this remarkable result is brought about we will not explain. While we do not regard the individuals who supplement a two-per-cent commission from their client with one of twenty per cent from the contractors as having any claim to be numbered among architects, we know that the public, after it has had a few wolves in sheep's clothing pointed out to it, immediately concludes that all sheep are wolves in disguise, and the faithful shepherd finds it best to prod the wild beasts in his fold on his own account, without calling the attention of the bystanders to them. At the same time, it is not amiss to suggest that the architect who carries out any building is virtually a trustee, with particularly good opportunities for wasting, appropriating and misapplying his employer's money. To award the execution of an important work to the architect who will do it for the least pay is exactly as sensible as it would be to award the presidency of a bank or the trusteeship of an estate to the lowest bidder. The lowest bidder in these cases would obviously be the one most likely to squander and abuse the funds committed to his charge, if he did nothing worse with them; yet the opportunities for malfeasance of a bank president or trustee are very limited in comparison with those of an architect. Under the ordinary contract, the architect can easily make his employer pay twice as much for his building as it is worth, and can put the difference in his own pocket, not only with very little fear of detection, but with still less apprehension of punishment if he should be found out. That such a thing rarely happens in any case, and never occurs with reputable architects, is simply the result of the conscientious view of professional obligations which is universally taken among them, but for which the public gives them much less credit than they deserve. A man who goes to a physician of reputation can do so in full confidence that the doctor will not drug and rob him, or keep him low with poisons, so as to gain an income by attending him, and he pays cheerfully the regular fee; or, if he chooses to consult a cheap quack, he knows that he does so at his peril, and his cheap advice is usually by far the dearest in the end. So with architects: the men who feel the sacredness of the trust reposed in them, and who will neither betray it themselves nor endure the companionship of those who are known to be capable of such

treason, have agreed, all over the world, upon a scale of minimum charges, for less than which they cannot properly carry out their commissions and save enough to give themselves and their families a modest living. If the five-per-cent charge did more than this, it would, in the keen competition between honest architects, have been modified long ago; but the tendency of late years, notwithstanding the increased competition, has been toward raising, instead of lowering, the standard, and whoever employs an architect who is satisfied with less than the regular rates may be tolerably sure that he is either not getting thorough and skilful service, or that the architect has a bad bargain, which he will be strongly tempted to make more favorable for himself in some surreptitious way.

IT is hard to maintain one's equanimity in reading such items of news as one telegraphed from Chicago a few days ago, to the effect that an epidemic of typhoid fever had broken out in Chicago, which most people with common sense attributed to the washing of filth from the sewers, by the recent heavy storms, far enough out into the lake to be taken up again at the "crib," and pumped back for the citizens to drink, but which "the mayor and other officials" found must be due to some other cause, as they had "examined the water at the crib," and had found it "safe to drink." Concerning the sanitary propriety of a system of drainage and water-supply which consists in emptying the whole sewage of the town into the place from which the city water-supply is pumped up, there might possibly be an honest difference of opinion, but the attempt to silence the complaints of the terrified citizens by saying that "the mayor had examined the water," and found it "fit to drink," strikes us as being the worst piece of official impudence we ever heard of. It is needless to say that the most expert microscopist the world ever saw, joined with the most eminent chemist, would not be able, in a year's testing by the most delicate methods, to say whether the water at the crib contained the germs of typhoid fever or not, and the "examination" of the water by "the mayor and other officials" was simply the broadest farce. That a person who was in the habit of drinking the lake water should be taken with typhoid fever is evidence to show that the water contained fever germs which would outweigh the negative assertions of all the mayors in Christendom, and as more than a hundred and fifty cases have occurred in a single street, the inference can scarcely be avoided that the infection comes from the lake water. As each case of fever forms a new centre, from which millions of fresh germs are thrown out, to find their way, probably, in most cases to the sewers, and thence again to the lake, the prospect seems to be that the city water-supply will soon be frightfully infected. Already, the physicians are advising their friends to boil all water before drinking it, but experience has shown that it is very difficult to have this precaution thoroughly applied, and radical measures may be necessary to save Chicago from a terrible visitation.

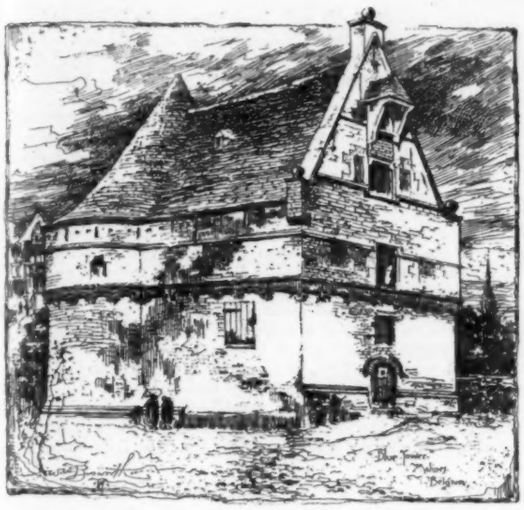
THE highest construction of masonry in the world, and, next to the Eiffel tower, which is likely to be for a long time unsurpassed, the highest structure of any kind, has just been completed in Turin, after a rather curious series of events. Our older readers may remember that we published, many years ago, detailed drawings of the new Synagogue of Turin, which was then in process of erection, and bade fair to be one of the ugliest as well as tallest of modern buildings. The Synagogue was commenced in 1863, from the designs of an architect of reputation, the Cavaliere Antonelli, who had already built a church in a neighboring town, with a very lofty dome. The extension of the same *motif* to the design of a synagogue on a large scale proved unfortunate. It was not long before it became evident that the building would not be well adapted to the needs of the congregation which were to occupy it, while its cost would far exceed the sum which could be devoted to its erection. Before the dome was far advanced, therefore, operations ceased, and the unfinished temple was abandoned to any one who could find means to complete it. After some years, the municipality of Turin, wishing to found some monument to the memory of Victor Emmanuel, decided to purchase the unfinished synagogue, and remodel it into a national museum. Antonelli was called in again, and remodelled his plans to adapt them to the new requirements, putting on top of his dome, which originally formed a sort of overgrown mansard roof, a spire or flèche, nearly as high as the whole of the rest of the building. Æsthetically, the effect as modified was, perhaps, no worse than it was before, and practically, as the remodelled structure would be higher than any other building in the world, there was something about the scheme to arouse the enthusiasm, and open the pockets, of the citizens, which the old plan would have lacked. Still, the affair went on slowly, and when the gilt statue was placed on the apex of the spire, five hundred and thirty-eight feet from the ground, M. Eiffel had already far surpassed it. The dome, which is quadrangular in plan, is composed of brick, in two concentric shells, with internal and connecting ribs. The interior is open from the third floor to the inner shell of the dome, giving an effect somewhat resembling that in the Palais de Justice at Brussels, although the Turin dome is much more spacious than the other. So far, the people of the city seem to have been unable to call the building by any name more appropriate than that of the architect, and as the "Mole Antonelliana," or Antonelli's Pile, it will probably be known for centuries to come.

A CHURCH of the fourth century is said to have been discovered near the city of Sophia. In digging for some purpose in the suburbs of the city, some stone walls were found, about two feet beneath the surface, which proved to enclose a room, about forty feet long, and thirteen feet wide, with an eastern apse, and two small chambers, one on either side of the main entrance. The whole affair was completely filled with earth. The masonry was in good preservation, though evidently very ancient, and the walls seem to be the remains of the church, *extra muros*, in which ecclesiastical history relates that the Council of Sophia, or of Sardica, as it was then called, was held in the year 343.

UNTIL now, the commercial manufacture of luminous paint has been confined to England, where a single factory turns out a small supply at a price of about three dollars a pound. This enormous cost seems to have prevented the use of the paint except as a curiosity, and it is fortunate that a certain firm named Mähren, at Triesch, in Austria, has found means to produce it, and place it on the market at fifty cents a pound, or about one-sixth of the English price. Even at fifty cents a pound, a substance composed of roasted oyster-shells and sulphur might, we should suppose, be manufactured at a good profit, but at that price it is likely to come into extensive use. Wherever it can absorb light during the day, it will give it forth at night, and it is said that a railway car in England, which had had its ceiling painted with it, was so brilliantly illuminated that one could see to read a newspaper in it during the darkest night, without other light. With all due allowance for the enthusiasm of early experimenters there is no doubt that cars with ceilings so painted would be pleasant to ride in, whether one could really see to read in them at night or not; and for making key-holes, stairways and sign-boards luminous, the paint would be invaluable. Its application to stairways is a particularly obvious one, and the Austrian manufacturers furnish a kind of wall-paper, on which the paint can be used to better advantage than on the bare plastering. The paper, which is of a leathery texture, is first treated with lime-water, and then primed with a composition furnished by the same firm. After this is dry, two thin coats of the luminous paint are applied, and the whole may then be varnished.

ANOTHER extraordinary railway has just been put in operation near Lake Lucerne. About twelve hundred feet above the lake, on the Bürgenstock, is a hotel, which is now connected with the steamboat-landing on the shore by means of a cable-railroad which uses electricity as a propelling force. The track is laid at an angle with the horizon which reaches thirty-eight degrees in some places, and the cars, in trains of two, are dragged up this slope, and around the surprising curves which diversify the line, by means of a series of endless ropes, driven by a huge wheel at the top, which is itself driven by an electric motor supplied by a current from three dynamos placed near the shore of the lake, and actuated by turbine wheels. The turbines derive their force from the stream known as the Engelberger Aa, which here falls into the lake, and the current from the dynamos serves not only to operate the railway, but to light the hotel and the neighboring roads, and to drive the pumping-machinery by which the settlement is supplied with water.

BUILDERS' HARDWARE.[1] — XXXI.



2. A. G. NEWMAN. Figure 475 is a fine example of a door-handle, having every appearance of being made from a pattern which was modelled instead of being chiselled or carved in wood. The leaf at top and bottom of the plate grows naturally from the single roll at the sides, and the handle is made to look just what it is — a door-pull — without being tortured into any unique or startling form. It is a thoroughly well-designed piece of hardware and as artistic as anything that is found in the market. Figure 476 is less pleasing in the result, though the motive is a good one. The top of the escutcheon is borrowed from an architectural form which needs relief and some fine mouldings, both of which could be added to advantage in this design. It is executed in silver plate, slightly oxidized and buffed to a clear surface on the high lights. Figure 477 illustrates a knob which serves admirably for a parlor or a music-room carried out with colonial fittings, — a Chippendale knob in fact, if the expression may be allowed, and very handsome by reason of the irregular reflections and high lights on the curved flutings. Figure 478 is a quieter design, but very satisfactory except for a little heaviness in the flutings. Figure 479 is a very careful and judicious design, the knob being one of the very few in which a broad, milled-edge forms a marked feature. It is a natural device and is worked in very prettily, the dainty ornament at the top of the knob being equally appropriate for its place. Figures 480 and 481 are other forms, both finished in dark antique bronze. Figure 482 is an escutcheon-plate for a sliding-door, and matches the plate of Figure 476. Figure 483 is a simple but very effective door-pull, in light bronze.

Newman has the reputation of doing a great deal of fine order work for the New York architects from special designs. Some of his best work cannot be reproduced here as the designs are not public. It should be remembered in considering all of this hardware that when a successful design is put on the market it is apt to be copied indiscriminately by rival manufacturers, which is naturally discouraging to those who are conscientiously seeking to do the best work. The rule, almost, is, that the better manufacturers make their designs, and the cheap men steal them.

[To be continued.]

OLD COLONIAL WORK OF VIRGINIA AND MARYLAND.[2] — III.

CARTER'S GROVE.

AT the end of a wearisome drive of about seven miles southeastward from Williamsburg, over a road which stretches through a flat and dreary succession of corn-fields, peanut patches and pine woods, the traveller, now nearing the north bank of the James River, will see afar off across the level fields an imposing cluster of buildings standing in a copse of tall, spiring trees. Leaving the road and winding tortuously across the plantation, he drives beneath the arching boughs of a short avenue of old locusts, and, emerging upon a circular lawn of somewhat unkempt appearance, sees before him the stately pile of Carter Burwell's ancient manor-house of Carter's Grove. There is a fine air of mossy age on this, the north side of the great house, but one's first glance at the façade reveals the disappointing fact that a very modern and wholly incongruous veranda covers a third of the first story — a feature sadly out of style and æsthetically deplorable; comfortable, no doubt, but ugly. The exterior is simple, square, massive; the openings, symmetrically distributed, have a rather high and narrow look. The house stands well up out of the ground, and above the cellar there are two stories crowned by a high, unbroken slate roof sloped from the ends of the house, so that the hips meet in the ridge about one-third of the distance from either end of the house. Two square chimney-stacks come out of the roof near the apex of the pitched slant, and rear their bulky shafts high above the ridge-pole, ending in a simple, though very effective, topping-out. The lines of the roof are bold and pleasing; near the eaves they curve outward in a graceful sweep. The cornice is of wood, and shows a row of dentils with a few simple mouldings under the rather broad soffit of the eaves. The solid-looking walls are laid-up of small, dark, English brick in Flemish bond, and they have a rich, deep-red color. The brick, iron, carved and panelled woodwork, sashes, hardware, oak flooring, and, in fact, nearly all the materials, were imported from England.

The house was built in the year 1737.

The walls show an increased thickness on the outside below the level of the first floor, and at the height of the second floor there is a band, slightly projected, several courses in width, and finished with a moulded course at the top and bottom, running all around the house. Flat arches, with voussoirs one brick and a half high, cover the openings. Otherwise, the brickwork is perfectly plain.

The walls, both exterior and interior, are of massive thickness, running from three to four feet throughout. The roof is a wonderful assemblage of massive timbers, put together with that intelligent observance of the principles of good carpentry which characterized the work of the period.

The door and window frames and the sashes are very solidly built; the sash-bars are broad and strong, and filled with glass of moderate size. All exterior woodwork is painted white.

The out-buildings flanking the great house are low, one-story, brick houses with high-pitched slate roofs pierced on each side with three dormer windows. One of these houses is used entirely for kitchen and scullery; the other serves as an office and storehouse. The main house is in the form of an oblong square, whose outside dimensions are about fifty by eighty feet, I should say.

A great hall, twenty-eight feet in width, occupies the centre of the first floor, cutting the house in twain. Out of this grand manorial entry-way heavy panelled doors of generous width give upon the front and rear, looking toward the river and the road. A broad arch, spanning about twenty feet, bisects the hall. Starting under this arch, the grand stairway sweeps up in three easy runs to the floor above. With its low risers, broad treads and carved balusters of mahogany, it has a very sumptuous appearance. The floors of the landings are inlaid with a handsome parquetry of light and dark woods. There is a broader step at the foot, over the rounded end of which the rail swings out in a spiral whirl, and ends over a delicate, twisted newel. The twisted post is repeated at the turns and occurs upon the landing above. The rail is nicely worked into ramps of easy curve. The balusters are set three to the tread. A wainscot in long panels of mahogany covers the wall side, and has ramps following the curve of the stair-rail, and twisted half-posts set opposite those at the turns. The last panels in the wainscot, next the landings, are made to follow the up-curve of the rail. The tone of the mahogany is very dark and rich, and the effect of the whole stairway is quite splendid. The downward ramp in the rail as it turns across the stair-well on the upper landing is well worth noting. The scheme is useful, since it warns one of the approach to the head of the stairs, as well as being pretty in effect. Several ugly gashes in the rail on the first flight are said to have been made by the sabres of Tarleton's dragoons, who, while bivouacked here during the Revolutionary War, enjoyed the quiet diversion of riding their chargers upstairs and hacking away at the hand-rail as they rode.

From the landing on the second floor doors open on either hand into bedrooms. There one passes under a round arch, which pierces a partition carried on the great arch below, into a large ante-room or corridor lighted by two windows looking out upon the terraces and the river.

From this lobby doors open into the principal bedrooms. The woodwork about the smaller arch is similar in treatment to that of the larger span on the first floor. Looking through it toward the head of the stairs, one gets a very pleasing picture. The walls of the lower hall are wainscoted from floor to ceiling. Above the base is a plain board dado crowned with a narrow cornice, the upper member of which is quite ornate, the whole being about three feet high. From dado to frieze the wall is covered with a single large panel, raised and bevelled.

The frieze contains two bronze members swelled out into a curved projection, and separated by narrow horizontal mouldings. The cornice is made up of a number of members, among them a bracketed

[1] Continued from No. 711, page 60.
[2] Continued from No. 705, page 305.

dentil band surmounted by a strongly-projecting corona. Three large panels sheath the wall above the stairs, diminishing in height with the line of the ascent, and over these the cornice is returned. Near the top of the first flight the upper panelling stops abruptly, all above showing the bare, plastered wall.

On either side of the arch are broad, fluted pilasters projecting from the wall, standing on bases of the height of the dado, and crowned by shallow, composite capitals richly carved. Above these the entablature is brought out with proper projection and returned at the ends.

Triangular panels occupy the spandrels of the arch and the side of stairway. The stars in these panels and on the key of the arch are from the frieze of another room. The jambs and soffits of all the doorways, and the soffit of the stairs, are handsomely panelled. The architraves are not especially noticeable.

An almost incredible misfortune has in recent degenerate times befallen the beautiful woodwork of this great hall: dado and panelled wainscot, swelling frieze and dentilled cornice, fluted pilaster and sculptured capital, panelled arch and noble enablature, all have been painted by some vandal hand — and I hasten to absolve the present proprietor, who is guiltless of the crime — in shrieking tones of red, white, blue, and — *mirabile dictu* — green! Absolute justice to the artist compels me to add that he has used his green rather sparingly, but what there is of it is most relentlessly green. And yet, under all this coarseness, while it is almost impossible to get the proper value of certain members to which the harsh coloring has given exaggerated weight, one can still see the dignity of the whole scheme of decoration.

The two floors are very similar in plan, there being two large rooms, almost square, on either side of the great hall, which occupies the middle third of the whole floor-space.

The two chimneys carried up on the middle transverse partitions give a fireplace of generous size to each room. Those in the library and dining-room are of very liberal dimensions. There is, in the parlor, a mantel in Sienna marble of very good design in the refined style of the period. The wainscot of the room, which is called the library for lack of other distinguishing name, is in large panels of pine, from which the paint has been scraped off. The color is very rich and dark, and the room altogether very handsome. I should estimate the height of the first-story rooms at about twelve feet, or perhaps fourteen, and, with their tall panellings, they are impressive. The window-frames are set well out, thus leaving a deep reveal in the thickness of the wall inside, where cosy window-seats have been built in.

The floors are all of rift oak, from four to six inches wide, and as sound as the day they were laid, a carpenter would say. The doors are in light raised, bevelled and moulded panels, solidly framed and very thick. My impression is that there are solid panelled inside blinds to all windows.

In its chief feature, the grand entry-hall, this handsome colonial residence adheres to the model of the English manor-houses of the time, in which the great baronial hall of feudal days still survived.

It was here that the family received their guests, the ladies pouring tea for the beaux who came riding *en grande tenue* to pay their court in the long afternoons of the beautiful Virginia summers. Within these thick walls it was cool always, and through the wide doors and windows, opening upon front and rear, the breezes from off the river came in unchecked. As the day wore on and the fiery sun was gone, the company sought the terraces and sauntered in the long twilight, looking down upon the purpling bosom of the James. The veranda, so essential a feature of our modern country houses, was not in vogue in the English prototypes of these colonial manor-houses, and was, therefore, not a part of the construction of the great river mansions, except in one or two instances.

As the days grew cold great wood-fires roared on the capacious hearths of the principal rooms; there was none in the hall. A richly-dressed throng of guests wandered at will from room to room in the more or less brilliant illumination afforded by candles in the sconces on the panelled walls. In the spacious dining-room the great oak board groaned beneath the weight of sumptuous feasts, and on the buffet stood the mighty punch-bowl to be emptied and refilled again and again, while flanking it were sparkling cut-glass decanters filled with wines of Spain, of Oporto, and the blue Canaries and cob-webbed bottles of old Madeira from the vaulted cellars below. On small tables in the library were urns of coffee and chocolate at which the ladies, *très décolletées*, in rich brocades, their pretty feet encased in high-heeled slippers of red satin, their heads a wonder of feathers and powder, patches and paste, ministered unto the wants of gay cavaliers standing about with their cocked-hats under their arms, and resplendent in gold-buttoned laced coats of costly stuffs, flowered waistcoats, satin knee-breeches, diamond buckles, powdered hair or frizzled wigs.

Meanwhile, in the small house, on the right of the main building, where the kitchen was established — for in colonial country houses

Carter's Hall.

of the better class the cooking was usually done under a separate roof — was a throng of negro domestics. The cooks crowded around the great fireplace in which the cranes swung laden with pots and kettles, and tended the spits which depended by hooks from the cob-irons, and slowly turned their burden of venison, wild-turkey, quail, or the humbler barn-yard fowl, to the glowing coals and the blaze of great logs heaped upon the fire-dogs. The younger negroes, plying in a steady stream between the houses, rushed to and fro with the innumerable dishes of the feast, and all hands halted now and then to refresh themselves with a draught of home-made persimmon beer.

This grand manorial seat was the abode of the rich and hospitable planter, Carter Burwell, who, besides being of distinguished family in his own person was very highly connected on the side of his wife, a daughter of "King Carter," one of the wealthiest and most noted planters in the colony. They and their descendants were people of the highest fashion in ante-Revolutionary times, and their home was the scene of many great dinners and routs and balls of brilliant splendor.

It is interesting to trace the wonderfully rapid evolution of the settler's habitation from the first rude shelter of bark and boughs up to the luxury and refinement of the princely residences of a century later. The men of the first companies lived in bark huts exactly copied after the wigwams of the Indians; and, indeed, so quickly did the charm of the wild untrammelled life of the wilderness conquer the traditions of their old-country home that many of them stuck to the wigwams long after a considerable civilization had developed in the colony.

Succeeding these came the house of logs, pine-trunks of medium size being at first merely cut into lengths, notched at the ends and laid up round; but soon, the first winters having developed an unexpected severity of climate, they were hewn square and the spaces between the logs carefully chinked-up with clay.

The primitive and unhealthful dirt-floors were superseded by a pavement of puncheons sawed from the butts of logs, and rude chimneys were built of sticks fastened together at the angles and roughly smeared on the inside with clay or plaster. The stack was carried up against one of the end walls of the cabin and on the outside — just as they are built to this day in the hovels of the poor negroes and whites throughout the South, which are, in fact, hardly an improvement upon the rude original we are describing.

The splitting out of rough shingles and clapboards from the clear butts of the larger timber marked an important advance.

Nails were very scarce and many houses were built entirely without the use of iron, thongs of rawhide and wooden pegs being used instead. Timbers were laid across the shingles to prevent them from being lifted by the wind. Bricks were made in Jamestown a very few years after the first landing, and were soon in general use for the lower-story walls. The oyster-shells, found in great heaps upon the river shores, yielded an excellent lime when well-burned, and a concrete of shells and lime was used in walls which are still to be seen. With the introduction of the female element into the community, home-rearing in the wilderness went forward with greatly renewed energy, and from this time a steady improvement in the style and importance of their houses is discernible.

In 1619, some ninety young women were sent out from England and speedily found husbands among the pioneers. In 1621, one widow and eleven maids were landed in Jamestown, all of whom were mated without loss of time, their husbands paying 120 pounds of tobacco apiece for the cost of their bringing-out. For each of the thirty-eight women, who arrived in the next consignment, 150 pounds of tobacco were given.

Tobacco was now the great staple of commerce and medium of exchange between Virginia and the mother-country, and as its cultivation became more profitable land was rapidly cleared, the colonists began to give up the old community system, abandoned Jamestown, and, establishing themselves upon broad plantations, entered upon an entirely new phase of colonial life, individual families living now in an isolation which was in strong contrast to the old order of things, and much better calculated to call forth the courage and latent energies of the settlers.

Gradually the habitation of the planter of middling estate grew into the type of which we find so many houses in the older parts of the colony, plain, comfortable, one-story houses, having usually a curb-roof pierced with dormers, four square rooms arranged about a hall of goodly size, and a great square chimney-stack rising out of the middle of the building.

These considerable improvements in the condition of the colonists had been brought about mainly by the firm hand and wise head of Sir Thomas Dale, who, arriving in May, 1611, as "High Marshal of Virginia," had at once set about reforming the abuses which were sapping the energies and obstructing the progress of the infant colony. One of his first acts of government was to do away with the old communal system under whose miserable defects the settlements had, until his arrival, been hopelessly struggling. Heretofore the law had required that everything should be brought to the "common store," from which the whole community drew its subsistence, every one sharing in the results of the labor of the entire body. The consequence was that as no one could hope to profit, especially by the fruits of his own industry, the most of them found it pleasanter to do nothing at all, "presuming that, however the harvest prospered, the general store must maintain them," and so they passed the time agreeably playing at bowls by the roadside, while a very few of the more diligent planted and tilled the corn which was to feed them all through the long dreary winter. When that gave out, as it usually did, they relied upon the uncertain hope of cajoling the Indians into giving them more. But the iron will of Dale soon made an end of all this. He required that every man of them should work his allotment of three acres of cleared ground, giving to the public granary two-and-one-half barrels of corn, and disposing of the rest of his crop as he pleased. Each one must provide himself with a home of his own, however rude. In a few years, when he saw that this new order was bringing forth good results, the Governor obtained from the London Company a grant of fifty acres for every man who would undertake to clear and cultivate that amount, paying a small yearly rental to the King "at the feast of St. Michael the Archangel," or he might select and take up one hundred acres on the payment of twelve pounds or so, or, were he fortunate enough to earn the gratitude of the Company by some important achievement, he might look for reward in the shape of larger grants to the extent of two thousand acres, not more.

But one thing more was wanted. The colonists had now made homes for themselves. They wanted wives to put into them. Sir Edwin Sandys, President of the London Company, set about supplying the want. He had already shipped over twelve hundred men to Virginia, and King James had contributed a hundred convicts, the latter not meeting a very cordial welcome, Sir Edwin now got together ninety maids of fair repute and sent them over to find husbands. It was a great stroke. On the arrival of the ships there was a rush to Jamestown to view their fair freight, and there were doubtless some curious incidents of courtship, novel and rapid. The company had made careful selection of the girls. There were only two black sheep in the flock, and these were shortly sent home again. The others were wooed and married without much loss of time. The company had directed that "in case they cannot be presently married, we desire that they be put with several householders that have wives until they can be supplied with husbands. . . . We desire that the marriage be free, according to nature, and we would not have these maids deceived and married to servants, but only such freemen or tenants as have means to maintain them . . . not enforcing them to marry against their wills."

So were complete homes founded at last in the wilderness, and with houses and lands of their own, and wives and children to work for, the Virginians were far on the road to permanent prosperity. The "servants," referred to in the Company's order concerning the young women, were indentured persons and sometimes convicts: the first black slaves to arrive in the colony were brought in a Dutch ship which sailed up the James River in 1619, and sold twenty Africans to the tobacco-planters.

Sir Thomas Dale having, in five years accomplished so much for the betterment of the colony, went back to England in 1616, and his arrival there is thus chronicled: "Sir Thomas Dale has arrived from Virginia, and brought with him some ten or twelve old and young of that country, among whom is Pocahontas, daughter of Powhattan, a king or cacique of that country, married to one Rolfe, an Englishman. I hear not of any other riches or matter of worth, but only some quantity of sassafras, tobacco, pitch, tar and clapboard — things of no great value, unless there were plenty and nearer hand. All I can hear of it is, that the country is good to live in, if it were stored with people, and might, in time, become commodious. But there is no present profit to be expected."

At this time the population of Virginia was reckoned at three hundred and fifty-one; thirty-eight "men and boys" at Henrico, of whom twenty-two were farmers; one hundred and nineteen at Bermuda Nether Hundred; twenty-five men at West and Shirley Hundred; fifty at Jamestown; the rest at Kiquotan, Dale's Gift, and elsewhere. The cultivation of tobacco was begun in this year.

In 1617–18, there were in Virginia about four hundred settlers. Four hundred and fifty bushels of corn came to the granaries, and the property of the colonists in cattle was considerable. Stringent laws for the government of the settlers were enforced. Immigration was greatly increased in 1619, and in July, 1620, the population had reached four thousand persons, and settlements had extended to the York River. An effort was being made to teach and Christianize the Indians.

A. B. BIBB.

(To be continued.)

ANTI-CORROSIVE PIGMENTS. — An interesting series of experiments has been conducted by the Dutch State railways for the purpose of ascertaining exactly the relative resistance of various pigments to atmospheric changes and to the corrosive action of sea-water. The results have proved that the red-lead paints are less affected by atmospheric influence than those that are composed of the brown oxides of iron, on account of their adhering more closely to the metal and of their possession of greater elasticity. It was also discovered that any sort of paint afforded an increased protection if the plates were pickled in hydrochloric acid before its application. The prevention of corrosion by salt water was found to be possible by the admixture of the oxide of some electro-positive metal, such as caustic lime and soda, but the efficiency of such a covering was destroyed when its alkaline properties had been neutralized by the absorption of carbonic acid. Magnesia, however, was proved to be most serviceable, seeing that it does not absorb carbonic acid, and not only does it protect the iron from galvanic action, but it also does not affect the anti-fouling qualities of the paint. — *Pittsburgh Dispatch.*

ILLUSTRATIONS

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

M. E. CHURCH, MADISON AVE., NEW YORK, N. Y. MR. R. H. ROBERTSON, ARCHITECT, NEW YORK, N. Y.
[Gelatine Print, issued only with the Imperial Edition.]

A DESIGN FOR THE TOMB OF AN ILLUSTRIOUS ARCHITECT, BY MR. NORMAN ST. CLAIR.

This design, which is intended to typify the seven lamps of Architecture, was not finished in time to be submitted in one of the recent competitions of the New York Architectural League.

ARTISTIC HARDWARE MANUFACTURED BY MR. A. G. NEWMAN.

See article on "Builders' Hardware," elsewhere in this issue.

STATUE OF DANTE, PARIS, FRANCE. J. P. AUBÉ, SCULPTOR.

See article elsewhere in this issue.

HOUSE OF HENRY TETLOW, ESQ., ALLEN'S LANE, CHESTNUT HILL, PA. MR. T. P. LONSDALE, ARCHITECT, PHILADELPHIA, PA.

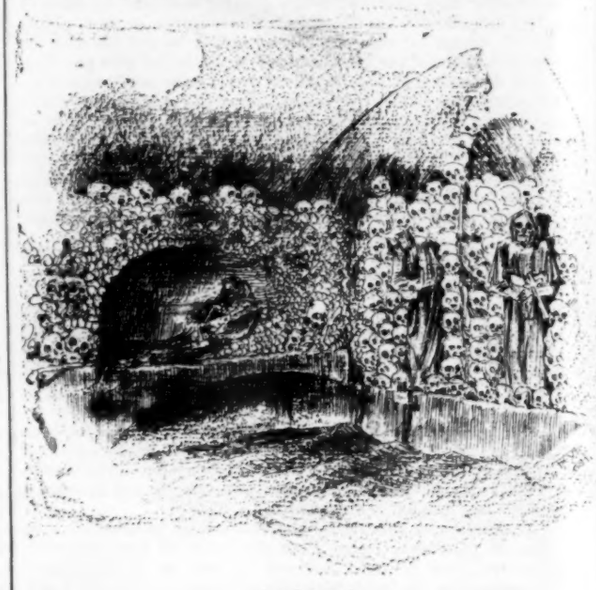
A CHATEAU AT YVETOT, NORMANDY, FRANCE. DRAWN FROM A PHOTOGRAPH.

AN ARCHITECTURAL KNOCKABOUT.[1]—V.

San Frediano on the Lung' Arno, Florence.

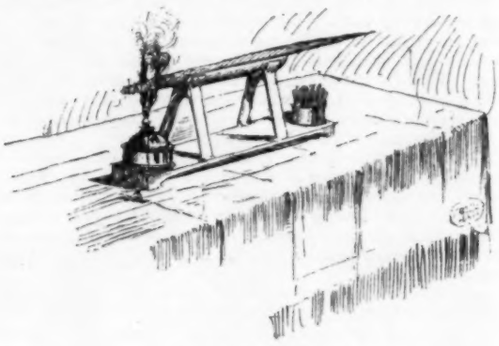
I WENT from Pompeii immediately to Naples, and from there to Rome. I arrived early in the morning, I remember, having sat up all night in one of those cramped little compartments where it is absolutely impossible to get a good night's rest, as you cannot stretch your limbs without putting your feet in some other man's face, or being stopped by a division partition in the middle of the seat. I had selected no hotel, and I remember how I walked around the streets of Rome trying to find lodgings, and the sensation I caused, by finally marching into the swell banking-house of Mackay, Hooker & Co., with my knapsack slung on my back and an unkempt beard, to get my *poste restante* letters. Here at Rome I revelled in the classics, of course, though everything was exactly as I had pictured it. I was particularly interested in the catacombs, and those on Cappucini Hill engaged my attention the most. I was given permission to make a sketch of some of them, which I did in the dusky light, while a hooded father watched me closely, fearing, no doubt, that if left alone I might purloin some decayed old tooth, or hide away a crumbling knee-bone of some departed monk. I was by far too scared to think of relic-hunting — a practice which has been carried to such an extent, that it has become a crying shame. These thieves — for such they are — do not content themselves with picking up, say a loose stone in some mosaic at Pompeii, but will (as I have seen them do) produce a tiny hammer, which they keep concealed on their person, and break and destroy some beautiful and carefully-guarded mosaic composition — that is, if they can do it unobserved. They will also chip off a piece of the fluting on some fine column or break a piece off some beautifully carved acanthus leaf on some Corinthian capital if they can get at it, — and these vultures generally can get at anything, when they want what they call "relics." The pity of it all is that most of this damage is done by our own enterprising countrymen.

In Rome, I did as the Romans do, although I was not long enough in the city to become very well acquainted with the habits of the people. The *cafe* life in Rome is fascinating. Every evening I would sit for hours among the crowds of women and officers all taking their coffee and "groc" in long, thin, vase-like glasses, the men smoking the same long Italian cheroot, which they would burn on one end



In a Catacomb.

for fully ten minutes in a brazier provided for that purpose, thus getting a good light and abstracting a great deal of the nicotine. I, of course, indulged in all the various beverages that the etiquette of the *cafés chantants* constantly compel one to drink. It was very interesting to see the officers stride in with their swords clanking and dragging on the floor, and I was greatly amused at the antics of the military students who were "gotten up" nearly as regardless as their superiors. I was convulsed one day by a funny incident that took place on the piazza before my eyes and which I



A Cigar-lighter.

was powerless to prevent. A near-sighted English tourist with his field-glasses slung over his shoulder and a very evident guide-book in his hand, was searching for "Cook's Excursion Office." As it happened, he was standing directly in front of it, with his back, of course, to the sign, and was busily engaged in searching every other sign on all the other sides of the piazza. A guide with his usual saturnine instinct pounced upon this poor unfortunate gentleman and asked him if there was anything that he could do for him? "Yes," the old gentleman answered, "tell me where Cook's office is." The guide shrugged his shoulders and said he would take him there for two lires, as it was a loss to him to show him to his destination for nothing. The other, being in a hurry, told him that he would give him one, but the guide was adamant, so the bargain was made and the aforesaid fiend marched that poor old man away around the whole piazza, up Cappucini Hill, steps and all, the Englishman puffing and wheezing all the time, till finally he brought him back to the identical spot, and showed him the office. The guide got his two lires, the tourist never perceiving the fraud. I laughed till the tears rolled down my cheeks, but perhaps I should n't have, as maybe the same trick has been played on me numerous times: it was funny all the same.

My great regret was that I could n't stay long enough in Rome for the pleasant weather to come in order to make some out-door sketches, as at that time it was impossible, but, in this day of photographs, I could get photos. of all the objects of interest I wished. As every artist or architect has from time to time sketched the same

[1] Continued from page 62, No. 711.

objects in Rome and elsewhere, I confined myself rather to the unique and unusual. I visited all the museums, the Vatican, the Sistine Chapel and the galleries, and did the usual things that every

Santa Maria del Salute, Venice.

traveller does, and did them thoroughly. After a stay of twelve days I left the Eternal City for gay Florence.

At the latter city I had a most charming time, luckily finding an aunt who made me "wash up" and be presentable. It was a god-send to meet some one of my own family after all I had gone through. I went heart and soul into the carnival which was then going on at Florence, distinguished myself by my ability to land the proper amount of *confetti* upon some lovely head, and made a great hit the last and miscellaneous day by my skill in throwing oranges, bricks and candy-balls. I rode horseback, went to Germans, and finally won a tennis tournament. It seemed very strange to me to be in ease and comfort again, in contrast to my late shabby condition and my experiences in third-class carriages and as a common deck passenger.

Bidding a regretful adieu to dear old Florence, I went to Venice where I found, on my arrival, two inches of hail on the piazza and more coming. Venice, you know, is somewhat of a moist place at best, but this extra coat of congealed water dampened my ideas as

Palazzo Widman, Venice.

to its loveliness. Yes, it is glorious; every one knows that. It was bitterly cold though, and after a sojourn of three days and two nights I left for Milan; from thence (greatly out of my way) to see the Lion at Lucerne, only to find on my arrival that it was "boarded up" and had been so for two months. I said very few kind things of Lucerne at that time.

F. L. V. HOPPIN.

[To be continued.]

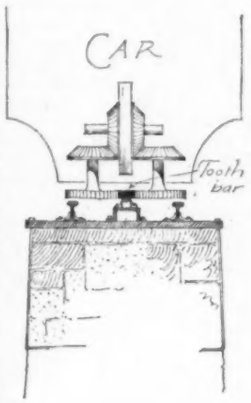
THE RAILROAD UP MT. PILATUS.

THE steepest tooth-wheeled railroad in Europe has just been opened in Switzerland, the projectors and builders being Messrs. Locher and Edward Geyer, of St. Gotthard fame.

As I happened to be one of a party which undertook the first trial-trip in June, I attempt a brief description of it for the *American Architect*.

Generally, Pilatus is reached from Lucerne, but our trip was made from Zurich. We travelled by rail to Zug, and down the Vierwaldstätter Lake by boat to Alpnach Staad. The latter is the valley station, as the Swiss say, of the Pilatus road — a mere collection of steamboat docks and inns nestled at the foot of the mount. One steps almost directly from the boat-landing up into the railroad-station. The latter is roofed, and has the usual look of such places. The locomotive stood tipped on its hazardous incline inside, panting in short breaths, in its hollow between the flights of stone steps on either side. The space was dark and the engineer ran the car out into the light, while our party descended to the road-bed to examine the rails and car-wheels.

Pilatus is not a granite Alp, but a limestone one. The bed of the road that hugs and follows the contour of the mountain was, therefore, cut with tolerable ease. The tunnels were bored and the whole extent of road, 4455 metres in length, was laid during the space of two years, although the hot months of the year alone proved practicable for work. But while a minimum of cost was had in respect of the time employed, an expense grew up, on the other hand, by reason of the necessity of transporting crystalline rock for the road-bed. The native limestone and conglomerate were unreliable. The force of the wind on this mountain is notorious, and, given a perfect adhesion of a car to its rails, a danger, in a moment of pressure from it, arises from the loosening of the earth or fragment of rock to which the rails are anchored.

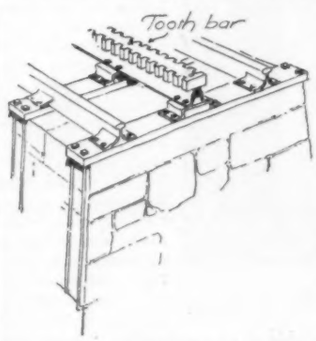


A solid wall faced and covered with granite blocks is, therefore, made to form the road-bed. Iron cross-beams are fastened to this bed by long anchoring-bars griped into the granite exterior of the wall. On these beams the iron rail and tooth-bar are screwed, with the tooth-bar in the middle. The bar is somewhat higher than the rails, is of soft steel (Martin), and has a double row of vertical teeth.

The tooth-wheels of the car, which grasp into the bar, are arranged in pairs (see drawing), while the axles of the wheels are perpendicular to the road-bed.

The axles of the Rigi and all other tooth-wheeled railways are horizontal. The Pilatus arrangement renders a heaving of the tooth-wheels impossible, and is the feature that forms its novelty.

A number of further details were of interest to the engineers of our party, as, for instance, that the holes of the steel screws that fasten the tooth-bar to the iron cross-beams were bored upon the spot. The latter are of cast-iron, but the supports of wrought-iron. Where curves occur, the teeth of the tooth-bar were first cut out of the solid, straight block and the bar then bent.



And then as respects the brakes and their connections: these act in the form of snail-wheels upon the upper pair of tooth-wheels. During the ascent of the mountain these snail-wheels remain stationary. On descending they also turn, and, indeed, at the rate of three hundred rotations in a minute. The slightest friction will stop the car.

The car itself is composed of machinery and passenger compartments in a single carriage, the whole being ten and a half metres in length and a little over two metres broad (2 m., 20 cm.). Passengers sit, going up, in the front portion, which is divided by two

partitions into four *coupés*, with room for thirty-two persons. The engineer has his station behind, while the machinery and boiler (of twelve atmospheres), that lies crosswise, occupy the space next the division-wall between the two portions. A conductor stands on the platform in front, or, on coming down, in the rear. The whole is supported by two pair of wheels, each with its twin tooth-wheels in their middle on the central toothed bar.

Brakes are supplied to each of the four wheels, and two claws are attached to the upper running axle, that clasp the head of the side-rails and prevent the car from being blown over by the wind.

The ascent is steep from the start. The passenger who mounts into the car and takes a seat finds his legs hang normally under his body instead of before his face. The sensations of laymen are not more creeping and horrible, perhaps, than along other mountain routes: I, for my part, find them all such an exquisite form of torture that Dante has not the least effect on me since I first underwent it. The picturing of one's anatomy later, when safe on a horizontal bit of natural ground, as it must have looked a moment before with every individual bone grasping the arms and rim of the car-seat spasmodically, while the eyes in one's head bulge out in fascinated fixedness upon the precipices an inch from one's base — even this post-caricature of fidgetiness hardly compensates for the original experience. The average incline on the Pilatus road is 42°, the highest, 48° — one of the steepest points being that beyond the viaduct over the Wolfort chasm to the upper Wolfort tunnel, on the first half of the way. A meadow that is there attained affords space for a double line of rails and a watering-station: the incline here is scarce 12°. Then follows the second half of the ascent and the winding round the whitish, barren peak of the Esel. The passenger finds himself alternately in the bowels of tunnels and clambering against the side of the exposed mighty wall, his car a mere spot in the dizzy wilderness of ether and precipices. The surveys and first cuttings here were made possible only by lowering scaffolding on ropes from the heights above, reached from the other or northern side of the peak. At the end of the last ascent, which is again at 48°, the locomotive stops at the summit station, having laid back 4,455 metres of road for a height of 2,076 metres. (Mr. Gautsche, of the Zurich Polytechnic School, who collected the above data for me, assures me that the height of 2,070, given by Hardmeyer, is inaccurate.)

The basins of the Vierwaldstätter Lake, with its chapel of William Tell, lie at one's feet, and before one the panorama of the Alpine world. Science has put no sublimer sight within the reach of man.

Countess v. Krockow.

JEAN PAUL AUBÉ.—I.

Hindoo House at the Paris Exhibition, designed by M. Charles Garnier. From *Le Moniteur des Architectes.*

JEAN PAUL AUBÉ was born July 4, 1837, in the village of Longwy, Department of Meurthe-et-Moselle, in the province of Lorraine, of parents in good circumstances. His father, a foreman in a large iron foundry, meeting with pecuniary reverses, came with his family to Paris in 1847 to seek a better fortune. The boy, Paul, had already begun to exercise the prevailing inclination of his nature by decorating with his pencil every object that presented a plain surface, caring nothing for study of any kind. To his father, who knew nothing of art, this persistently followed and infantile pastime was anything but amusing, and, not knowing what to do with the boy, he sought the advice of a friend of the family. "Send him to a drawing-school and let him have his own way," was the just appreciation of the counsellor. Paul was accordingly sent to "La Petite Ecole," in the Rue de l'Ecole de Medicine, at the age of twelve years — that famous cradle of art-teaching where so many distinguished French artists first began their studies, and to which all turn with the pleasantest memories and the warmest gratitude. There Paul met and formed life friendships with La France, Dalou, Barrias, Delaplanche and many other of the prominent artists of to-day, who, like him, were destined to help form the galaxy of famous French sculptors and painters.

The forenoons were devoted to drawing, and the afternoons to the automatic performance of the routine of the day-school of his quarter. At home, he cut and carved every object that would respond to the edge of a knife or chisel, and the stone balustrade of the house in which he lived was the object of his most friendly attention. Nor did he desert it until it had been transformed into all the images that it could be made to represent. Thus the boy lived and played until 1856, when he entered the Government School of Fine Arts, or rather, went into the private studio of Duret, one of the professors of sculpture, as at that time there were no studios on the premises of the school. As Duret was too ill to give instruction to his pupils, the youth derived but little advantage from being with him, though he went to the studio more or less steadily for many years.

Paul's father, finally becoming convinced that his son appeared to be good for nothing but a sculptor, very sensibly decided that the sooner he began actual work with a person of that profession, the better it would be for all concerned. At this time, the younger Danton was enjoying a wide notoriety in Paris among common people, but no reputation among artists, and to him the father took Paul, with the intention of placing him as an apprentice. But the sculptor received neither pupils nor apprentices. He, however, advised the father to go to his brother, the elder, or grand Danton, as he might be willing to receive a pupil. He also asked the father this rather disturbing question: "Are you rich enough to support your son while he pursues the art of sculpture? For I must tell you that the life of a sculptor is a hard and uncertain one, and the profession in anything but good repute in this community, bringing in little money and less fame."

To the grand Danton they went, but with the same result as at his brother's. He, too, advised the father in regard to the precarious profession of sculpture, but suggested, as the son must work to earn his bread, that he should be apprenticed to a plaster-moulder, as that trade was more certain of providing at least a living to those who followed it, and was happily exempt from the odium generally attached to a sculptor who was unsuccessful in gaining money. And this advice came from a *Grand Prix de Rome* and a sculptor of talent as late as 1860!

Young Aubé was accordingly bound as an apprentice to a plaster-moulder named Marminia, a Savoyard, with whom he began to mix plaster in dead earnest. This pleasing occupation, though having charms of its own, was not in the highest degree satisfying to the taste of the young artist, and, though he worked hard and industriously, he could not see that he was working in the line of future eminence. He preferred to make things rather than cast them, and he took every chance that offered to gratify this preference. Fortunately, the moulder was a man of sense and heart, and he quickly appreciated the true bent of the boy's genius. To the elder Danton the moulder led his apprentice, and the sculptor, this time, consented to receive him as a pupil. With him Paul remained for nearly five years, though earning no wages and living in great poverty. Such a state of things was not encouraging; some extra exertion must be made to gain more of the bare means of existence. There was only one way to which the sculptor could turn, the way followed by all poor students in sculpture, and that was to try to make little busts and figures to sell to art-dealers. Paul, therefore, began to make figures and groups for the porcelain manufacturers, and, though he worked on them for weeks, he could only get from two to ten dollars each, and glad, even, to get that.

During all these years he had no idea of any earthly happiness save that of the typical Paris *gamin*. To do as he pleased, without thought or care for the morrow, never seriously disturbed by poverty, however distressing, and having one object only — to make sculpture. Every day was its world. He had no ambition, no plans and no serious anxieties. The fancies of the day sufficed him, and his life passed as simply as the days and months came and went. In this deliciously enviable and truly sylvan ease Aubé lived then, and so continues to live to this day. It is the true life of an artist. His mind is to him a daily and permanent kingdom. He expresses it in his work, and adds to his kingdom a paradise.

Aubé still kept up a desultory attendance at Duret's studio, and gained, now and then, some modest school recompense in the way of mentions and medals, but never obtained what is understood as a school success. His porcelain enterprise did not succeed very well, and, leaving Danton's studio, he began to earn his own living by working for his school comrades who had been more fortunate than he in their professional relations with the world. This he continued to do until 1868, when he went to one of the provincial cities to fill an engagement with a manufacturer of *Bons Dieux*, or one who makes statues for religious purposes. Aubé made this engagement in order that he might make and save more money than he could in Paris, so that after a few years of economy he might be able to execute a figure for the *Salon*. Success at that bar of art-judgment is considered to be the first popular object to be attained by all artists, foreigners as well as Frenchmen. For the latter it generally means medals, professional reputation and honor, and, above all, work from the Government. To gain this, Aubé determined to forego for a while the pleasures of Paris art-life, of which there is no description, and to take his chances in the tranquil surroundings

of a provincial city. In this enterprise, as with the porcelain figures, he did not succeed, and at the end of two years he was worse off than ever, both in mind and pocket. Debts hung heavily over him, and the misery of poverty appeared in no comforting form.

He longed for Paris. At this moment the Franco-German war broke out, and the sculptor, filled with patriotism and forgetting his woes, hastened to that city and joined the National Guard. In it he served until the close of the war, sharing all its reverses and suffering all its privations. During that time he had some spare hours, and he spent them in working for Cugniot, a Paris sculptor.

When peace came he returned to his home in the provinces, gathered together the few fragments of his furniture left by the Prussians, paid his debts, and returned to Paris with his wife and little daughter. And there he began over again his plan of winning honors at the *Salon*.

Aubé regards the breaking out of the war as his salvation, for it brought him back to Paris, the place of all others where he ought to live. If the war had not come he would, in all probability, have remained where he was, lived a useless life, so far as art was concerned, and his country would have lost one of her best sculptors.

Again in Paris, Aubé resumed his work with his fellow artists, Cugniot and Falguière among the number, though still preserving a professional independence.

Soon after the close of the war the *Figaro* newspaper began to erect its new building, and it opened a general competition for a statue of the historic character whose name it bears. The contest was the talk of all Paris until it was decided. Aubé's sketch received a "mention" in money, and, as one of the prizes, was preserved in the office of that journal.

In the *Salon* of 1874, the sculptor exhibited his first public work, "The Syren," and received a third-class medal. It was bought by the Government for one thousand dollars, cast in bronze, and placed on the Promenade, in the city of Montpellier.

This event was the beginning of a gradual professional success, which has eventuated in the year 1888 in his being the author of the sculpture of one of the best two monuments in France: that on the one erected to the memory of Gambetta, in the Place du Carrousel. The other is the group by Rude, on the Arc de l' Etoile.

Aubé had now simply to go on in professional success: with reasonable industry his future was assured; he had passed the turning point in his life.

In 1876, the sculptor exposed a statue of "Galatea," for which he received a recall of a second-class medal, and sold his model, executed in marble, to the Government for sixteen hundred dollars. It, also, was sent to Montpellier. He was now generally recognized by artists and amateurs as a sculptor of singularly good taste, excellent ability, and of unusual loyality to what is understood by the more exacting judges as good sculpture. His methods were simple and straightforward, he depended entirely upon nature, and had nothing to do with working from plaster casts, or employing any of the easy ways of producing statues.

Somewhere about 1876, Haviland, the great porcelain manufacturer — who, by the way, is an American — engaged Felix Bracquemond, one of the most eminent of French engravers, to take charge of the art-department of his establishment. Both determined to bring the productions of the house up to as high a degree of artistic expression as it was in their power to do, and one of the important steps in this proposed progress was that of decorating each vase that they made by modelling directly upon it, instead of applying to its surface duplicate forms that had been stamped or pressed in a mould, and that this should be done by the best sculptor that could be procured. To accomplish this purpose, Bracquemond applied to Aubé for assistance, and the latter consented to go to Auteuil, where the factory was situated, to work. Every morning on his arrival a fresh vase was given to him, and he spent the whole day, as a general thing, on each one. For the most part, the decoration consisted of one or more graceful nude female figures, but occasionally a more elaborate design was executed, which consisted of vines, cupids, nymphs and various other motives. One of them was called "The Aurora Vase." On one side was represented the Goddess of the Morning behind her prancing steeds; on the other, a falling figure of Night.

Aubé executed more than three hundred of these beautiful objects, each one marked with his initials. As they gradually appeared upon the market, they attracted an immediate and appreciative attention, soon followed by a veritable arti tie craze. Porcelain and art lovers purchased them with the liveliest avidity, and the critics complimented both artist and manufacturer in the warmest terms. The pecuniary result to all concerned was most satisfactory, for they were not only novel and varied in design, graceful and free in their execution, but they pleased the general public as well as the artists. They also demonstrated the extraordinary fertility and readiness of the sculptor's capacity of artistic invention, and to an extent extremely rare in any period of art-expression.

In the *Salon* of 1877, Aubé exhibited portraits of his two children, and the bust of a lady, and in 1878 his marble statue of "Galatea," for which he received a second-class medal. In the following year he appeared with a plaster statue of Dante larger than life. It placed him at once among the strongest sculptors of his country, in the estimation of both artists and critics. He also exhibited at the same *Salon* a fine statue, in plaster, of "Agriculture," destined for the Trocadéro Palace. But strangely enough he received no recompense, though the city of Paris bought the Dante and cast it in bronze.

Public competitions for statues and monuments were at this time of almost weekly occurrence, and the sculptor entered into many of them. He made a sketch for a standing statue of Rabelais for the city of Tours, and received the second prize, the city taking the sketch. In the next essay, for a monument to the National Defence, he also came off second best, and the jury recommended the city of Paris to execute the sketch. Soon after he made another sketch for a sitting statue of Rabelais, winning neither recompense nor recommendation. Though unsuccessful with committees, Aubé gained decidedly in reputation. Both artists and critics recognized his merits and were not slow in prophesying for him an eventual future of professional good fortune.

T. H. BARTLETT.

[To be continued.]

SEVEN YEARS OF EXCAVATION OF THE ACROPOLIS.

AFTER seven years of slow but continuous progress, the excavation of the Acropolis of Athens has at last reached its term. Almost the whole surface of the hill has been dug down to the rock, sometimes to a depth of twenty feet and over. The results, of which we are thus enabled to take stock, lie before the spectator in the new faces of walls and foundations brought to view; in the innumerable architectural fragments, drums of columns, capitals and moulding, cornices and reliefs, that strew the reconstituted surface of the tableland on which the original Athens stood, and, finally, in the marvellous archaic sculptures in the new museum which has been here erected for their reception. Much of priceless value has certainly been brought to light, but the traveller who can recall the Acropolis as it existed before the spirit of investigation had seized upon its present possessors will not regard its present aspect without a pang. Time may, perhaps, restore something of the

picturesque beauty at present diminished, but Time, alas! can never bring back the historical memorials, Roman and Byzantine, mediæval and Turkish — nay, even the monuments of the struggles of New Greece itself for independence, which have been ruthlessly torn to pieces in the search for more "Classical" relics.

Among the architectural relics brought to light are several new fragments of the Pelasgian walls, huge polygonal blocks, which followed the contour of the original crest of the hill, with rock-cut stairs and passages at intervals, several of which have now been opened out, and which together represent the defences of the earliest Athens of all — the Athens that existed before the Greeks took possession of the site and thrust out the indigenous inhabitants. At the point where this huge mass of archaic masonry abuts on the southeast corner of the Propylæa, the later Hellenic work of Pericles's architect suddenly breaks off, the finely-cut blocks being roughly cut away, so as not to interfere with the older line, and thereby, as Dr. Dörfeld has shown, hangs an interesting bit of architectural history. It is generally recognized that, according to Mnesicles's original plan, the two wings of the Propylæa were to have been made to balance each other. As actually constructed, however, the southern wing is only about half the width of the other, although it is constructed in such a way that it might eventually be enlarged to match the other. The remarkable manner in which its corner is broken short off, rather than interfere with the old Pelasgian wall, affords, however, a clue to the mystery. This old wall had been used as the boundary of the Temenos, or holy enclosure of the Brauronian Artemis, and it thus becomes evident that the symmetry of Pericles's great entrance towers was given up in obedience to a religious outcry which he did not then find it politic to ignore, though the work was, at the same time, executed in such a way as to insure the possibility of carrying out the original design if circumstances should render it feasible at any future period.

The Sparrow House, Ipswich, Eng.

The most interesting site now uncovered is that which reveals the foundations of the earliest temple of Athena, alongside of the later shrine of her ward, the mythical Athenian king Erectheus. This was the chief original sanctuary of the Acropolis burnt by the Persians, and it was only at the time of the great restoration that the site of Athena's shrine was transferred to where the Parthenon now stands. But, perhaps, the most inspiring discovery of all is that which enables us in part to recover the actual sculptures of the principal pediment of this earliest Parthenon. The style of the work proclaims it to belong to the last decades of the sixth century B. C.

The existence of this ancient temple by the side, and partly occupying the site of the later Erechtheum, goes far to explain how, even in later days, when the temple had been transferred to the spot that it still occupies, a superior sanctity still clung to the ancient precincts. Here, in later days, was the special shrine of Athena Polias, the guardian of the city, containing the ancient olive-wood image to which, every four years, the solemn procession of the citizens made its way, bearing aloft on the mast of its galley-car the festal mantle or *peplos*, the birthday gift to the goddess. It is this procession, as is well-known, that forms the subject of the Parthenon frieze, and one of the most recent fragments of sculpture produced by the Acropolis excavations supplies a welcome addition to one of the central slabs of this great work.

Perhaps, after all, however, the most wonderful series of objects brought to light are the archaic figures. Many of these were found under the Acropolis wall erected immediately after the Persian invasion of 480 B. C., and the others from deposits of a similar kind also dating from the pre-Persian period. They may be divided into two principal classes: the early groups wrought in *poros* stone, and apparently derived from the pediments of early sanctuaries, and votive figures in marble. Of the pediment sculptures discovered, three relate to the combats of Heracles, and are of an entirely new character. The subject is a three-headed monster with winged, but otherwise human bodies, ending in the triple coils of serpents, which taper off to fill the gable end. The heads have pointed beards, curving slightly under the chin, of a brilliant blue color; the hair is also blue, the bodies red, the snaky coils banded alternately with red and blue. The monster represented is unquestionably Typhon, whose lower extremities were composed of serpents, and whose triple body is described by Euripides. He holds in one hand a flat object, the significance of which is uncertain, and is apparently engaged in watching the struggles between Heracles and the Triton.

The earliest figures discovered resemble those of that ancient island school of which Chios was a principal centre. In some cases the body is a mere trunk of stone, a reproduction of the rude wooden *xoana* that served as images in the most primitive days of Greece. Another survival of the earlier methods is seen in the fact that many of these figures have their heads and arms socketed and pegged onto the stock, as had been done in the case of the old wooden idols. These archaic statues have one and all a monotonous, meaningless smile, and the large staring eyes which, as seen in the primitive images of Athena gave her the epithet of the "owl eyed." The eyes, indeed, play a very important part in these early figures, supplying, as has been demonstrated by a series of observations, the canon of measurement for the whole face. The breadth of the mouth, the length of the nose, the position of the chin and brows are in fact determined by multiples of the diameter of the pupil, the outline of which (as is still to be seen in the old head of Hera at Olympia, which shows a central point and scratched outer circle) was first traced with a compass. The whole construction of the face is thus mathematical.

Another recently excavated group, which has not, indeed, been as yet fully pieced together, consists of two lions tearing down a bull. This group is in high relief, sculptured on several tufa blocks set side by side. It is of enormous power, and the effect it produces is heightened by the still brilliant coloring. The lions have scarlet manes; their bodies are of a paler red; their eyes black, with white pupils. The bull's body is a deep blue, in places turned to green, and from the holes torn in its hide by the lions' claws its life-blood pours in crimson streams down its flanks. The subject is wholly Oriental in its character, so much so that the theory has been broached that this group is one of the offerings made by King Crœsus, and that it was wrought by Ionian workmen sent over by him for the purpose.

But the later of the archaic figures found in the excavations of the Acropolis show a great advance on those more primitive methods. As illustrations of art-history they are of unique importance, since they afford us a series of examples of the early Attic school of sculpture as it existed during the decades that preceded the Persian invasion. Before these statues were discovered the real character of this art — which as carried to its highest point by Calamis and other masters, still drew forth the æsthetic tribute of the Greeks of later times, and took their place beside the works of Phidias and Praxiteles — was only tentatively to be gathered from a few isolated examples.

It now stands revealed to us in a whole series of works of infinite delicacy and refinement. Nothing is more interesting than to see the stiff archaic style thawing before one's eyes under the bright and genial influence of the Attic sky. The tresses of the hair — mere icicles before — fall gracefully about the shoulders; warmth and life begin to be infused into the contours of the body; the drapery hangs in more elegant folds; individual expression now peeps forth in the faces; the eyes are less staring and obliquely set; the chin is finer cut; the curve of the exquisitely modelled mouth dissolves in evanescent dimples, suggestive of that "holy and speaking smile" which was the distinguishing charm of this ripe archaic art.

Owing to a remarkable combination of discoveries, we are now even in a position to go beyond the mere general attribution of these figures to the early Attic school. A columnar base was found containing a fragment of a dedicatory inscription recording the fact that the statue which it had originally supported was the work of the sculptor Antenor, the author, it will be remembered, of the celebrated group of the Tyrant Slayers, Harmodios and Aristogeition, of which a Roman copy is to be seen in the Naples Museum. On the top of

this base was a socket showing that it was intended to receive the two feet of a statue, and among some of the fragments of sculpture already brought to light Dr. Studniczka was so fortunate as to recognize the missing feet, and finally to recover the whole statue, with the exceptions of a few fragments here and there. The figure is that of a woman holding up the corner of her mantle, like early Etruscan figures of Hope. In her right hand, however, she seems to have held a fruit rather than a flower. The folds of the falling drapery are curiously undercut, being hollowed out two or three inches, and round the edge of the *peplos* runs a rich Ionic border of star flowers, with their petals alternately painted red and green. The *chiton* or tunic below is of a reddish purple hue: the hair, as in most of these votive figures, has been painted red. The eyes are inlaid with crystalline stones, and show iris sockets once filled with a darker material. The eyelashes are of metal. In the whole array of figures discovered nothing is more remarkable than the brilliant coloring, of which they still show evident traces. As a rule, however, the faces themselves and the broader surfaces of the drapery seem to have been left in plain white marble, the polychrome hues being reserved for the hair and ornaments, the embroidered borders of the mantles, and the tunic beneath, of which only a small part is usually visible. The showing through of the original marble surface thus eliminated the suspicion of an inferior material having been made use of, while the colors supplied to the rest of the figure a warmth and variety which the stone could never convey.

The ancient conventions, such as that which gave a crimson hue to the hair, are repugnant certainly to modern notions, and yet taking the figures as a whole, in spite of their original brilliance, there is nothing tawdry or barbarous about the coloring. To have had the privilege of examining one of these archaic statues, fresh from the deep deposit where it had lain since the days of Themistocles, is to have had revealed to one an aspect of Hellenic art too often forgotten by those whose knowledge of ancient sculpture is confined to the stock examples of our museums and galleries, which have long lost all traces of their pristine hues, and stand forth in a monotony of marble pallor. But the experience afforded by these Acropolis statues is unfortunately itself of a most transient nature. The hues, so fresh and brilliant when each several figure was first brought into the light, fade almost before the eyes of the spectator. Statues which I myself had seen at the moment of excavation, only a few years back, with mantle and tunic almost as gay as when they were painted, with bright eyes and rosy lips, are already dead and pale. Nothing can arrest the progress of this decay, and what in some of the more recently discovered statues may still to-day be seen by those who make a pilgrimage to the Acropolis, will in a few years be lost to sight forever.

Of the votive single figures the most characteristic are a series of archaic female statues clad in mantles and tunics, and in several cases holding fruit in their hands. They are probably to be taken as representations of the actual persons who made the offerings that they bear, and are intended, like those who upon the tombs bear food and drink to their departed friends, to perpetuate the offering, an idea as old as the oldest Egyptian monuments. The most naïvely simple of these, with her woollen tunic and peaked red shoes, has all the appearance of a peasant women; her shoes, indeed, are very like those worn by the Greek country people at the present day. — *Manchester Guardian.*

BUILDING LAW

PARTY-WALLS.

ALBANY, N. Y., July 31, 1889.

Question. — *Will you please send me any forms of deeds used in Boston that contain provisions in relation to party-walls and the covenants about the use, repair, etc. of the party-wall. It is unusual here to have party-walls, and I want to see the usual covenant, etc. used in Boston.* *W. B. V. R.*

Answer. — It cannot be said that there is any special form of party-wall agreement in use in this city. We think that there is a prevalent notion among architects and builders that there is such a thing as a "party-wall" considered as a distinct species of property, with special legal attributes, and that there is some common form of words appropriate to creating such a kind of property. This idea, however, is entirely unfounded. Parties make such agreements as they see fit in regard to party-walls, as in other matters; and the result is that there are probably no two party-walls in Boston with identical covenants as to duration, height, privilege of extension, obligation to repair, etc. We had occasion recently to examine professionally the various party-wall agreements which are to be found in the "*Massachusetts Law Reports.*" The result was that out of twenty party-wall cases in our "*State Reports,*" twelve contained party-wall agreements, and no two of these were identical. Parties make such agreements as they please, and these are seldom alike for the reason that the wishes and necessities of adjoining owners differ in different cases as much in regard to the nature and duration of adjacent walls, as in other matters. Practically the most satisfactory way is for both parties to sit down with their lawyers and talk over among themselves the various contingencies which may arise, determine what they wish to have happen in such cases, and draw the covenants accordingly.

In qualification of the above it should be said that there is perhaps some approach to uniformity where parties are improving land in blocks. In such cases something in substance like the following agreement is very frequently found in deeds of real estate in the city of Boston.: —

"And if the granted premises or either of the lots adjacent there-
"to as shown on said plan shall be built upon, partition walls may
"be placed half on the granted premises and half on the adjacent lot;
"and the owner of that one of said lots adjacent to that thus built
"upon, shall, whenever he shall use said wall, pay one-half the cost
"thereof of so much as he shall use."

A great many houses have been built in Boston under agreements similar to the above, but differing perhaps in some respects which might prove of great consequence in after years.

Under a form like the above, it is understood that no right of rebuilding exists in case the buildings are destroyed by fire or storm; and probably a wall once built under such a covenant could not be extended in height or length. If it is desired to give a right of extension, or a right to raise the wall, or to rebuild it in case of fire, the right should be expressly mentioned.

In regard to the provisions for payment, a difference of practice exists here. Some lawyers prefer to make the second builder pay half the actual *value* at the time of use; others prefer to use a covenant like the above which binds the second builder to pay half the first *cost.*

It should be added that the law concerning party-walls is in a state of considerable confusion, and builders and architects will always do well to consult a lawyer before attempting either to draft a party-wall agreement, or build into or upon or otherwise use an existing wall which they have heard was a "party-wall."

COMMUNICATIONS

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

THE LONGITUDINAL SHRINKAGE OF WOOD.

RICHMOND, VA., August 12, 1889.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — In that excellent book, "*Safe Building,*" by Louis DeCoppet Berg, F. A. I. A. Boston: Ticknor & Co., page 190, I notice the statement "xx; neither will timber shrink on end or in its length." This is a commonly accepted idea, but is a great mistake. All soft timbers, if not all of every kind, shrink in their length; the fine-grain, soft pieces, more than the coarse-grain, hard pieces in the same woods. There is in my office a drawing-board, eight feet long, three feet wide; made of two widths of white pine. It was finished with battens on one side, and was true in all respects; but after remaining in the office for some time, probably through two winters, the soft, fine-grain width had shrunk in length about three-eighths of an inch *more than the hard, coarse-grain piece,* the two having separated for some distance from the end.

"*Nicholson's Dictionary,*" Vol. II, page 430, says, "the length of timber is unalterable by seasoning or any kind of weather." This, too, is a mistake, and the illustration given about unseasoned timbers united together is not good; it only proves that timber shrinks more in width than in length of same dimensions.

Floors, ceilings and other boarding, laid in continuous courses, furnish abundant evidence of shrinking in their lengths.

Yours truly, ALBERT L. WEST, *Architect.*

NOTES AND CLIPPINGS

THE OKEFENOKEE SWAMP. — There is in Georgia a terra-incognita of 600 square miles, known as the Okefenokee Swamp. It used to be the retreat of Indians, and during the war of deserters, but for fifty years it has been given over to the possession of bears, panthers, deer and smaller game. Hunters are occasionally tempted to go into the almost impenetrable morass, and they bring back wonderful tales of the richness of the soil and the wildness of the cypress jungle and the perils of the bog into which they have in places thrust poles to a depth of twenty feet through a black soft mud that appeared to be the vegetable mold accumulated through ages. In only a small portion of the swamp can a good footing be had, and those who have penetrated the other portion have floundered through after almost superhuman exertions, men having fallen into boggy places from which it required the efforts of three or four comrades to extricate them. Several attempts have been made to organize companies to drain the swamp, but all have failed for lack of capital. Now Marshall P. Phillips, through his agent, A. B. Linderman, who made the contract with Florida for Hamilton Disston, proposes to the Georgia Legislature to pay 12½ cents an acre for the

swamp, and to deposit $20,000 forfeit for the carrying out of his contract. Mr. Phillips is reputed to be worth something over two millions, and has made several investments in the South. The territory he proposes to get for this sum is about two-thirds the size of Rhode Island, and by the survey of Gen. Gilman in 1879 contains 624 square miles, or 399,360 acres of land, which when drained will be equal to the best cane lands of the Mississippi River bottoms. Mr. Linderman claims that the drainage will cost $500,000, and it is probable that it will come inside of that amount, for the Disston Company has completed the drainage, except as to excessive rainfall, of 500,000 acres at a cost of something over $400,000. They will have to widen the canals some on account of the excessive rainfall at times, as the legislative committee only allowed them 90,000 acres as drained because on a tour of inspection they found the heavy rains had flooded temporarily a large part of the swamp. It will probably cost them $1 an acre before they get through with it. At Mr. Linderman's estimate the Georgia swamp will cost $1 25 an acre to drain. When that is done the land will be worth on the average something like $10 an acre. As this is the only State land available for the school-fund, it is natural that there should be some opposition to its sale at 12½ cents an acre at a time when the ways and means of raising a school-fund trouble the Legislature more than almost any subject except the State road. Heretofore the swamp has been sold several times to persons who were unable to carry out the terms of the grant, and heretofore there appears to have been little idea of the value of the land and little discussion, but now the question is being pretty thoroughly sifted, and the Georgia Legislature will be apt to get a consideration if they part with the property. They have been grimly reminded of the Legislature which in 1795 passed an act for the sale of 35,000,000 acres on or about the Yazoo River in Mississippi and the wrath of the people who rose up a few months later and hurled that Legislature from power. The proposed purchaser's agent uses the argument that private capital can do the work better than the State, but that does not command much attention in a State where the Capitol Commission has just completed within the original appropriation the best million-dollar house in America and a better one for the cost than any citizen of Georgia has ever erected. In 1808 the State will have 1,600 convicts on its hands at the expiration of the convict lease, and as the experience of the lessees has shown that this kind of labor can be maintained on better food than that of the average free labor for $145 to $150 a year, the State will be in a position to do the work cheaper than any corporation which has to pay a dollar a day for labor. — *New York Times.*

A Plucky French Girl. — Some years ago four men, who were employed in cleansing a common sewer at a place called Noyon, in France, upon opening a drain were so affected by the fetid vapors that they were unable to ascend. The lateness of the hour (it was eleven o'clock at night) rendered it difficult to procure assistance, and the delay must have proved fatal had not a young girl, a servant in the family, with courage and humanity that would have done honor to the most elevated station, at the hazard of her own life attempted their deliverance. This generous girl, who was only seventeen years of age, was, at her own request, let down several times to the poor men by a rope. She was so fortunate as to save two of them pretty easily, but, in trying the cord which was let down to her for the purpose, she found her breath failing, and was in great danger of suffocation. In this dreadful situation she had the presence of mind to tie herself by the hair to the rope, and was thus drawn up, almost expiring, with the poor man in whose behalf she had so humanely exerted herself. The instant she recovered she insisted upon being let down again, but her exertions this time failed of success, for the fourth unfortunate man was drawn up dead. The corporation of the town of Noyon, as a small token of their approbation, presented the heroine with 600 livres and conferred on her the civic crown, with a medal engraved with the arms of the town, her name and a narrative of the action. The Duke of Orleans also sent her 500 livres and settled 200 yearly on her for life. — *Fire and Water.*

Chinese Floating Gardens. — In a recent number of the *China Review*, Dr. Macgowan describes the manner in which floating fields and gardens are formed in China. In the month of April a bamboo raft 10 feet to 12 feet long and about half as broad is prepared. The poles are lashed together with interstices of an inch between each. Over this a layer of straw an inch thick is spread, and then a coating two inches thick of adhesive mud taken from the bottom of a canal or pond, which receives the seed. The raft is moored to the bank in still water, and requires no further attention. The straw soon gives way and the soil also, the roots drawing support from the water alone. In about twenty days the raft becomes covered with the creeper (*ipomœa reptans*), and its stems and roots are gathered for cooking. In autumn its small white petals and yellow stamens, nestling among the round leaves, present a very pretty appearance. In some places marshy land is profitably cultivated in this manner. Besides these floating vegetable gardens there are also floating rice fields. Upon rafts constructed as above, weeds and adherent mud were placed as a flooring, and when the rice shoots were ready for transplanting they were placed in the floating soil, which being adhesive and held in place by weed roots, the plants were maintained in position throughout the season. The rice thus planted ripened in from 60 to 70 in place of 100 days. The rafts are cabled to the shore, floating on lakes, pools or sluggish streams. These floating fields served to avert famines, whether by drought or flood. When other fields were submerged and their crops sodden or rotten, these floated and flourished, and when a drought prevailed they subsided with the falling water, and while the soil around was arid advanced to maturity. Agricultural treatises contain plates representing rows of extensive rice fields moored to sturdy trees on the banks of rivers or lakes which existed formerly in the lacustrine regions of the Lower Yangtse and Yellow Rivers. — *London Times.*

Steel Buildings. — A very favorable account is given in the French papers of the new system of building houses of steel plates, introduced some time ago by M. Danly, manager of the Société des Forges de Chateleneau, who has satisfactorily ascertained that corrugated sheets, of no more than a millimetre in thickness, are sufficiently strong for building houses several stories high, and the material used allows of quite a variety of architectural ornamentation. The plates thus employed are of the finest quality, and, as they are galvanized after they have been cut to the sizes and shapes required, no portion is left exposed to the atmosphere. It is asserted that houses constructed in this manner are very sanitary, and that the necessary ventilating and heating arrangements can readily be carried out. — *Iron Trade Review.*

A Steel Church. — A church made of cast Bessemer steel has just been constructed by an iron-works at Hennegau in Germany. Its destination is the island of Manilla, where frequent earthquakes render a brick building unsafe. The weight of this steel church is 1,600 tons, and it will, it is thought, from calculations made, be capable of resisting earthquakes of a very severe nature. — *London World.*

TRADE SURVEYS.

All of the recently published commercial and trade statistics emphasize the advisability of foresight in maintaining a safe and elastic financial system for the future. The bank reserves are nineteen million dollars less than a year ago, but this simply means that the greater general activity calls for more money. Should still greater activity overtake us next year, as is probable, with only seven millions surplus in New York banks, the necessity of some different method of relieving possible financial stringency than the paternal one in vogue will suggest itself. Last year's currency supply during September was $60,000,000, besides gold coin. So urgent was the demand for money, that after this vast amount had been injected into trade channels, the clearing-house banks at New York had only between thirteen and fourteen million dollars. The business requirements this year are and will be much heavier. All crops are larger, building operations are more extended, investments are more general, and the necessity for currency is greater. Are our sources of supply sufficient? Our admirable commercial methods can assist us in checking unfavorable symptoms, but whatever causes are at work to cripple trade, if there are any, will in time reach the surface, and to the surprise of the tens and hundreds of thousands of producers and exchanges. For the first time within recollection, extremely favorable industrial and commercial conditions exist on both sides of the water. It is barely possible that much of the labor discontent that has shown itself on our side during the past three years will show itself abroad. The conditions are ripening for it. Wages are low, hours long. A sort of military authority is maintained over workmen in some respects, and grievances are not and cannot be speedily righted. Manufactures are expanding, the habits of the common people are improving, and they are becoming animated with a desire to earn more, work less and improve their social conditions somewhere near what they dimly understand exists on this side. The long-standing advantage of British and European manufacturers over American manufacturers will from this out steadily but, perhaps, very slowly decline. A general movement for higher wages is in progress throughout Central Europe. For example, in Brunn, Austria, 14,000 out of 15,000 wage-workers engaged in the seventy cotton and woolen mills of that place struck against the present rate of wages, which are, for men, the miserable pittance of six florins per week, and, for women, two florins. The causes of these industrial agitations are threefold: due first, to an advancing intellectuality among the common people, to the better margins employers have been making, and to the increased cost of living consequent upon the gradual diversification of employments. On the other hand, immigration, machinery and the general decline in the cost of production and exchange of products is lessening the general cost on this side, and thus tending gradually to equalize conditions at home and abroad. The practical outcome may be that economic forces will harmonize conflicting interests on both sides of the water. Labor agitations abroad will not merely result in better wages, but in better habits of living and greater interest in what the governing classes are doing.

The only thought at present among both governing and employing classes is to put them down as quickly and quietly as possible, and give no further earnest thought to the workers or their grievances or aspirations. Herein they err. The deep popular discontent is the factor or the pivot around which grand and healthful realizations are possible. All business conditions point to greater activity. Last week's observations on industrial conditions apply with greater force. Production is being stimulated. Prices are strong. Distributions keep warehouses half empty. Jobbers are anxious, and manufacturers are putting-on hands and piling-up raw material. Builders have all they can do, and manufacturers of material have long contracts. The brick-makers in the flooded districts, as well as the lumber interests, have met with serious losses. Manufacturers of paper-fixtures, decorations and inside products for houses and buildings have a full season's work on hand. The little industries are thriving, and this is a hopeful sign. July railroad earnings show an increase of 8 1-3 per cent, and for seven months a fair increase is shown. Cereals and meat products exhibit great increases. The cotton crop is 300,000 bales ahead of last year. A favorable fact is shown in last week's Eastern freight shipments from Chicago, which netted 58,524 tons, against 40,318 tons for same week last year. No cause of any magnitude has appeared on the surface to warrant a general restriction of work, or to do less work next year than has been done this year. Ship and boat building is helping greatly in the iron industry. Railroad-builders affect to see excellent prospects for great railroad-building next year. The makers of heavy and light merchant steel will advance prices in a few days to profit by the great expansion in demand. Anthracite coal was advanced this week at New York. Advances seem to be the order of the day, and the grounds for making them are safe. The abundance of capital is another important fact, but capital is easily frightened, and a multitude of partially-finished enterprises might be prejudiced by a sudden withdrawal of promoters and subscribers. All these things have to be kept in mind, but the closest study possible fails to show that there is more than a very trifling percentage of risk in pushing new schemes and enterprises. Short crops would do great harm, but the experience of years shows that no general short crop is probable. For two or three years past, Texas and some portions of Kansas, Arkansas and New Mexico have suffered severely, but a smiling season has restored faith and hope. The newer sections are steadily making fresh markets for Eastern manufactured products, and the demand will of necessity rapidly grow.

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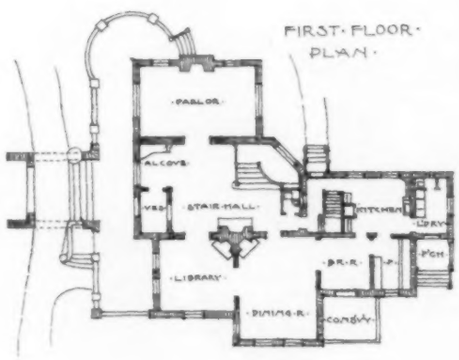

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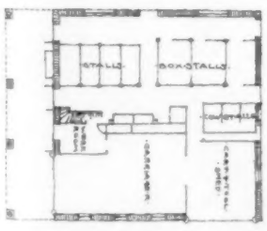

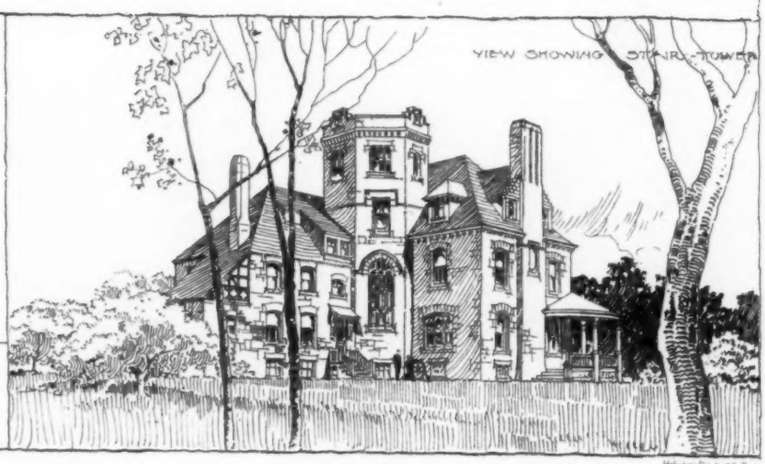

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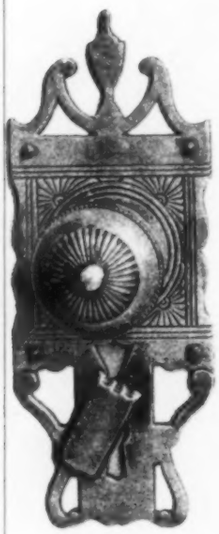

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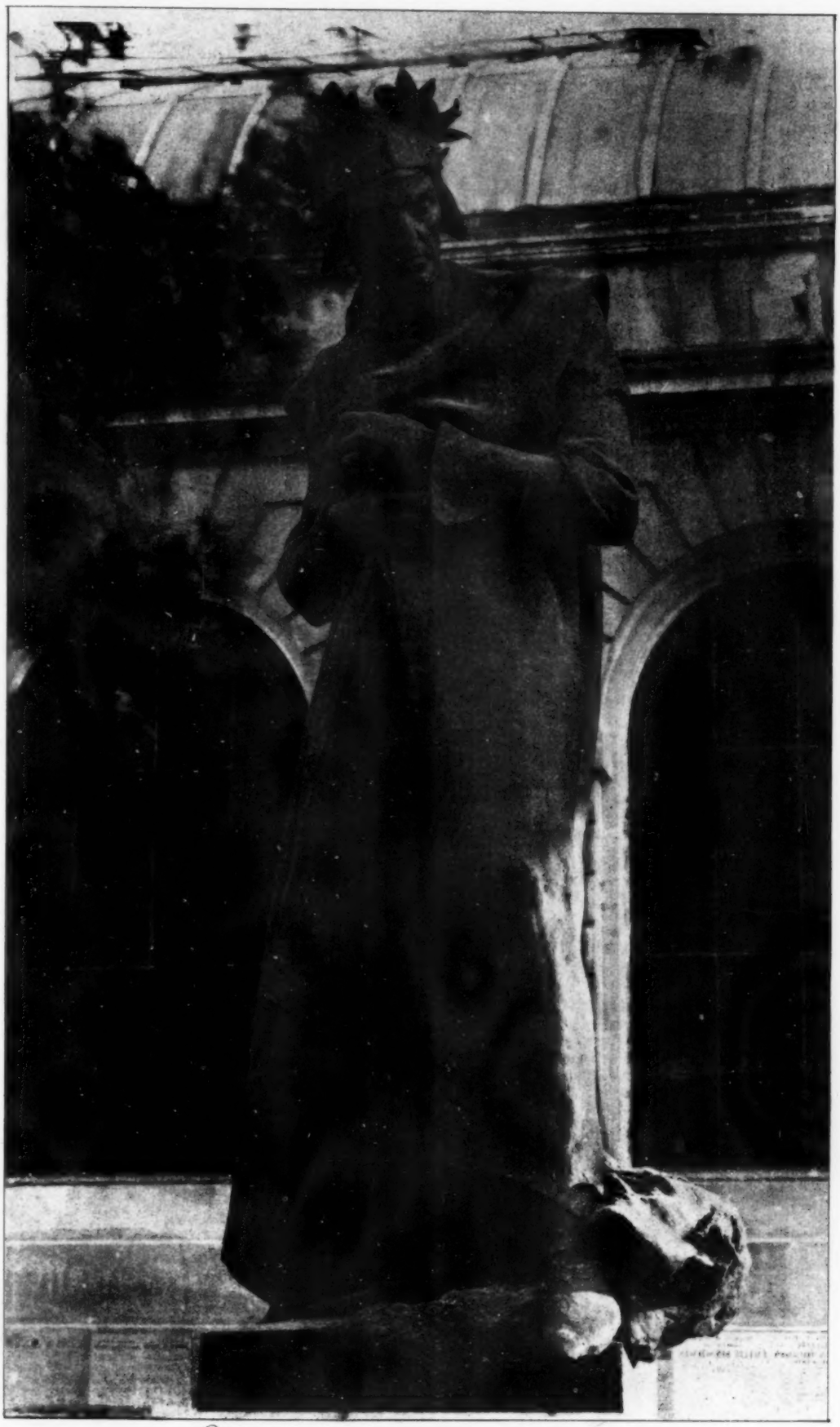

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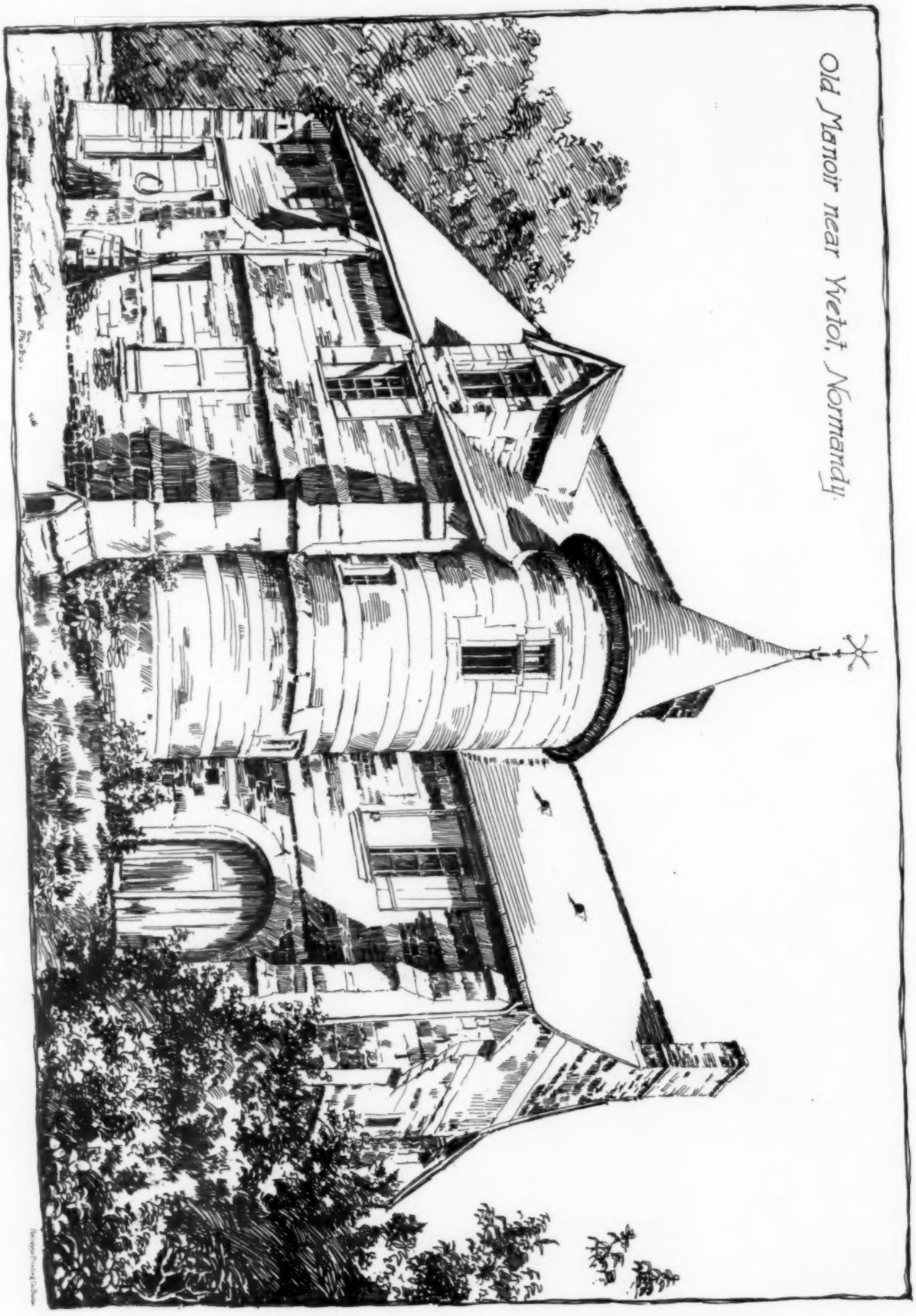

Old Manoir near Yvetot, Normandy.

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